

## NISTTech

### NANOWIRE ARTICLE AND PROCESSES FOR MAKING AND USING SAME

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#### Abstract

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A nanowire article includes a substrate; a plurality of nanowires disposed on the substrate, the nanowires comprising a semiconductor nitride, the semiconductor comprising an element selected from group 3 of the periodic table; and a superlattice layer interposed between the substrate and the plurality of gallium nitride nanowires. A process for producing a nanowire article includes disposing a superlattice layer on a substrate; disposing a first buffer layer on the superlattice layer; contacting the first buffer layer with a precursor; and forming a plurality of nanowires from the precursor on the first buffer layer to form the nanowire article, the nanowires comprising a semiconductor nitride, the semiconductor comprising an element selected from group 3 of the periodic table. A process for producing a nanowire article includes nitrogenating a substrate to form a nitrogenated layer on the substrate; contacting the nitrogenated layer with a precursor; and forming a plurality of gallium nitride nanowires from the precursor on the nitrogenated layer to form the nanowire article in an absence of a catalyst, wherein individual gallium nitride nanowires of the plurality of gallium nitride nanowires include a length axis that is substantially perpendicular to the nitrogenated layer.

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#### Status of Availability

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This technology may be available. Please contact NIST's License Officer at (301) 975-2209.

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